

## Gifted and Talented Apply Bloom's Revised Taxonomy to a unit of work

### Science Forces

#### Whole class input Unit 1

LO: Can shapes be changed by force?

#### REMEMBERING

**Mind map** language the word forces to assess what their understanding of forces is.

#### UNDERSTANDING

Watch clips of objects (javeline, arrow, football, rocket) moving on IWB and discuss how they move and that this is a result of a push or pull force.

Support/EAL – have a wordbank of pulls/push forces with pictures at each activity.

Do activity

#### Plenary

#### CREATING

As a class, creative a 'force wall' of vocabulary that can be used to move/change an objects shape. Use starter activity to reinforce vocabulary: [http://www.ngfl-cymru.org.uk/vtc/changing\\_shape\\_mat/eng/Introduction/default.htm](http://www.ngfl-cymru.org.uk/vtc/changing_shape_mat/eng/Introduction/default.htm)

#### Activity 1 Bodily Kinaesthetic and Spatial Dominant

Split class into three activities and rotate:

#### APPLYING

*Can we change an object's shape by force?*

Challenge chn to change shape or size to a selection of different objects (elastic bands, clay, paper, stones, rubbers, bag of sand, sponge, lego etc.)

#### ANALYSING

First choose an object and apply **SCUMPS** to the object  
E.g. clay Size/colour/uses/material/parts/Can we change its shape?

Discuss actions that are being used to change object's shape e.g. stretch, squash, crumple, bend, fold, twist and whether these are a push or pull force.

#### EVALUATE

Discuss how some objects can resist force. Talk about whether the change of shape stays the same. If you pull an elastic band and a piece of clay what is the difference between the two objects 30 seconds after the force?

#### Activity 2 Logic/Mathematical dominant

#### ANALYSING

(2) *Can we stop or hold an object?* Use the toy cars and various different materials/ramps to explore how the car can be moved – through a push or pull force and then how it can be stopped.

#### EVALUATING

#### Critical Thinking Questions Intrapersonal

Ext – talk about gravity in activity 2, there is a force that pulls objects down. Extend chn's thinking through independent work. Think about and write down answer...

	<ul style="list-style-type: none"> <li>• A ball of plasticene stops when it lands on the table. It does the same thing when I catch it. Why is that? (Both are examples of a push force)</li> <li>• How do you push a sponge? (by pushing it inwards) Can the school could be moved? Physically no-our force is not big enough. How could we make a greater force? (bulldozer) An immobile object cannot resist the force of bulldozer.</li> </ul> <p>Interpersonal &amp; linguistic Discuss answers as a group at the end, justify reasoning.</p> <p><b>Activity 3</b> <i>Linguistic dominant</i></p> <p><b>APPLYING</b> <i>What kinds of movement can we make?</i> Chn to play with the outside play equipment.</p> <p><b>ANALYSING</b> Then describe the different kind of movement that objects can be made to have. As they make the movement ask chn to write the word on a w/bd. (topple, swing, rise, fall, slide, roll, lean, turn, climb)</p>
<p>Whole class input Unit 2. <i>LO Changing movement by force</i></p> <p><b>REMEMBERING</b> Recap vocab from last week and explain that today they are going to be predicting what forces are doing what in different actions/events. Explain 'gravity' is a force that pulls down.</p> <p><b>UNDERSTANDING</b> Demonstrate by dropping a ball in mid air or get children to jump up and down. Gravity is a 'pull' towards the centre of the earth. All the earth has gravity and it's why everything stays in place despite it being a sphere. Ask where there is no gravity? Do activity</p> <p><b>Plenary</b> Ext group to share their poster and present what they have discovered.</p>	<p><b>Activity</b> <b>APPLYING</b> <i>Musical</i> Children to perform different actions and decide which forces are involved. Predict first then carry out.</p> <p><i>Naturalistic</i> Go outside and use bats/balls/ rackets and describe the force</p> <p><b>ANALYSING</b> <i>Spatial</i> Record in a <i>Venn diagram</i> Justify a decision – why did you think it was a push/pull force? Ext:</p> <p><b>EVALUATING</b> <i>Logical/mathematical intelligence</i> Compare all the actions that created a pull – are there any similarities? Compare the actions that created a</p>

	<p>push – are there any similarities?</p> <p><b>CREATING Spatial</b></p> <p><b>Ext:</b> Create a poster to compare and contrast what would happen if you dropped an apple on earth and in space? Draw arrows to show the force.</p>
<p><b>Whole class input Unit 3</b></p> <p>LO: How can we make a fair test?</p> <p><b>REMEMBERING</b></p> <p>Talk partners - what have you learnt about forces? <b>Interpersonal</b></p> <p><b>APPLYING Musical</b></p> <p>Warm up: get children to act out an action. What forces can you see being used.</p> <p>Show the children the question to investigate: <u>How does changing the height of the ramp affect the distance the toy car travels?</u></p> <p><b>ANALYSING</b></p> <p>what you will need to carry out the experiment and in talk partners: how will you find this out? Collect ideas in a <b>mind map</b></p> <p><b>EVALUATING Logical/mathematical</b></p> <p>Model the experiment (badly!) Show a small car going down a high ramp. Then have a massive car going down a medium ramp. Ask: What was wrong with that? Explain that it wasn't fair as the big car won't go as far. Do it again with the same car but this time give the car a massive push. Change the ramp and give a tiny push. Was that fair?</p> <p><b>CREATING Intrapersonal</b></p> <p>Can the children come up with the new idea that you need to use the same car and you need to give them the same force to be a fair test?</p> <p>Draw out that you need to make tests fair. To make a fair test you only change 1 thing. We are changing the height of the ramp. Together, brainstorm all the things you keep the same.</p> <p><b>Naturalistic</b></p> <p>Ask children to carry out the experiment can choose to do indoors or outdoors.</p> <p><b>EVALUATION</b></p>	<p><b>Logical/mathematical &amp; visual</b></p> <p>EXT: to measure using a meter stick how far the cars have gone</p> <p>Core/support: to visually see which ramp makes the car go furthest</p> <p><b>UNDERSTANDING</b></p> <p>EAL: show children the investigation before and make sure they fully understand the question. Use the ramps to explain the concept.</p>

<p>Plenary: get children to complete a simple sheet to assess understanding and form a conclusion.</p>	
<p><b>Whole Class Input Unit 4</b>  <b>LO: What is friction? Can we make a prediction about a friction investigation?</b></p> <p><b>REMEMBERING</b>  Recap that a force is an incisible Push or pull.  Explain that today we are going to learn about the force of friction.</p> <p><b>UNDERSTANDING</b>  Show and discuss the Powerpoint from sharepoint.</p> <p><b>APPLYING</b>  Ask a child to go down the slide. Now send them down in a sack from sports day. Then put a carpet down and see if they can slide. Observe how different surfaces made the slider go fast or slow.</p> <p><b>ANALYSING</b>  Push an ice cube across the floor. Then push a plastic brick, then push a rubber. Which went further? Which moved the easiest?  Explain that we are going to do an experiment using the ramps to see which surface has the most friction. Show the ramps and the different surfaces. Draw out that the slower the car the more the friction.</p> <p><b>REMEMBERING</b>  Explain the idea of a prediction. Predict which of the surfaces will have the most friction.</p> <p><b>Do activity</b></p> <p><b>EVALUATING</b>  Plenary: how correct were our predictions? Explain that a prediction is only a 'best guess' but it should be based on what we already know.</p>	<p>Activitiy  <b>ANALYSING</b>  Get children to carry out the experiment. (see differentiation)</p> <p><b>Interpersonal</b>  EXT and core mixed ability: run the car down each ramp with a different surface and measure how far the car goes using a meter stick</p> <p>Support: mark off with a piece of tape how far the car runs each time.</p> <p><b>Intrapersonal</b>  <b>CREATING:</b>  <b>Ext:</b> Can they design a vehicle that they predict will have a lot of friction on a surface of their choice?  Eg. On grass/carpet/ice  While it have big wheels/small/what material will it be made from etc?</p>

## Unit 5 Whole class Input

**LO:** To understand the meaning of the words "float" and "sink".

To explore the buoyancy of a variety of common materials.

To explore the influence of shape on the buoyancy on a body of a given mass

### REMEMBERING

Open Floating and sinking notebook on sharepoint. Discuss what these terms mean and ask for examples. Use the picture on notebook to help.

### APPLYING

Children to think about what forces are in action 'how does something float or sink?'

Most children will learn that a balance between whether an object floats or sinks.

Plenary

Ask children to share their findings.

### ANALYSING

Children to investigate which of these items will sink or float and organize results in a **Venn diagram**

Pencil

Raw Egg

Ruler

Apple

Nail

Toy Boat

Paperclip

Rubber Ball - Can add more items as required

### EVALUATING **Visual/Spatial**

Look at the venn diagram for similarities/difference.

What is controlling if objects float or sink?

(upthrust and gravity control)

### CREATING **Intrapersonal**

Ext: Can you change the design of the plastercine to so it will float, applying what you have found out about floating and sinking - does it float? You can only test it once!